

Systems of Equations

Solve each system with substitution

1) $-2x - 3y = -6$
 $x - y = -2$

2) $-2x + y = 5$
 $-4x + 2y = 10$

3) $x - 4y = 4$
 $4x - 2y = 2$

4) $x - 3y = 10$
 $-2x + 2y = 0$

5) $6x + y = -6$
 $-7x - 3y = 7$

6) $-x + 5y = -3$
 $x - y = 7$

7) $-x + y = 4$
 $-2x + 2y = 1$

8) $5x + y = 24$
 $-10x - 2y = -48$

9) $x + 5y = -2$
 $-3x - y = -22$

10) $-6x + y = 0$
 $18x - 3y = -3$

Solve each system by elimination.

11) $3x - 7y = -21$
 $x - 14y = -7$

12) $-2x - 4y = -14$
 $-4x + 6y = -14$

13) $x + y = 6$
 $-10x + 6y = -12$

14) $-6x + 7y = 22$
 $12x - 6y = -12$

15) $7x + 4y = -15$
 $14x - 6y = -2$

16) $-6x + 2y = -6$
 $-9x + 3y = -3$

17) $-5x - 5y = 0$
 $4x + 6y = 10$

18) $4x - 6y = 18$
 $-6x + 5y = -15$

19) $5x + 4y = 13$
 $-2x - 6y = -14$

20) $4x + 5y = 8$
 $6x + 2y = -10$

21) Jasmine wants to make 16 ml of a 39% acid solution by mixing together a 78% acid solution and pure water. How much of each solution must she use?

22) Farmer Amanda's Produce Stand sells 20 oz. bags of mixed nuts that contain 32% peanuts. To make her product she combines Brand A mixed nuts which contain 20% peanuts and Brand B mixed nuts which contain 35% peanuts. How much of each does she need to use?

23) Brand X sells 25 oz. bags of mixed nuts that contain 56% peanuts. To make their product they combine Brand A mixed nuts which contain 60% peanuts and Brand B mixed nuts which contain 40% peanuts. How much of each do they need to use?

24) A metallurgist needs to make 10 mg of an alloy containing 81% platinum. He is going to melt and combine one metal that is 90% platinum with another metal that is 60% platinum. How much of each should he use?

25) Farmer Castel's Produce Stand sells 24 kg bags of mixed nuts that contain 52% peanuts. To make his product he combines Brand A mixed nuts which contain 67% peanuts and Brand B mixed nuts which contain 31% peanuts. How much of each does he need to use?

26) Nicole wants to make 15 fl. oz. of a 38% alcohol solution by mixing together a 20% alcohol solution and a 50% alcohol solution. How much of each solution must she use?

Answers to Systems of Equations

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|--|---------------------------------|--|----------------|
| 1) $(0, 2)$ | 2) Infinite number of solutions | 3) $(0, -1)$ | |
| 4) $(-5, -5)$ | 5) $(-1, 0)$ | 6) $(8, 1)$ | 7) No solution |
| 8) Infinite number of solutions | 9) $(8, -2)$ | 10) No solution | |
| 11) $(-7, 0)$ | 12) $(5, 1)$ | 13) $(3, 3)$ | 14) $(1, 4)$ |
| 15) $(-1, -2)$ | 16) No solution | 17) $(-5, 5)$ | 18) $(0, -3)$ |
| 19) $(1, 2)$ | 20) $(-3, 4)$ | 21) 8 ml of 78% solution, 8 ml of pure water | |
| 22) 4 oz. of Brand A, 16 oz. of Brand B | | 23) 20 oz. of Brand A, 5 oz. of Brand B | |
| 24) 7 mg of 90% platinum, 3 mg of 60% platinum | | 25) 14 kg of Brand A, 10 kg of Brand B | |
| 26) 6 fl. oz. of 20% solution, 9 fl. oz. of 50% solution | | | |